Remarks/Arguments

In an Office Action mailed June 28, 2005, the Examiner rejected currently pending Claims 1-8 in the above-identified application. Specifically, the Examiner rejected Claims 4 and 8 under 35 U.S.C. § 112, second paragraph (for indefiniteness); Claims 1, 4, 5, and 8 under 35 U.S.C. § 102(e) (novelty); and Claims 3, 4, 6, and 7 under 35 U.S.C. § 103(a) (obviousness). The Examiner also provisionally rejected Claims 1-8 under the judicially-created doctrine of obviousness-type double patenting. In light of the amendments above and the arguments below, applicants respectfully request reconsideration.

Claim Rejections – 35 U.S.C. § 112, second paragraph

Claims 4 and 8 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to distinctly claim the subject matter regarded as the invention. Claims 4 and 8 have been cancelled above, and hence this rejection is now moot.

Claim Rejections – 35 U.S.C. § 102

Claims 1, 4, 5 and 8 stand rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Alfenito (U.S. Patent No. 6,355,419). Specifically Alfenito teaches the fabrication of an array of oligonucleotide probes on a nylon substrate, wherein the array is further divided into subarrays by hydrophobic barriers that prevent cross-contamination between adjacent subarrays. Alfenito ('419) at column 3, lines 5-15. Claims 1, 2, and 3 are cancelled above and hence this rejection is moot.

With respect to Claim 5, however, applicants submit that Alfenito does not teach the method of the present invention in which the hydrophobic groups are synthesized by the array synthesis instrument after the synthesis of the array. Alfenito teaches the use of a hydrophobic grid membrane filter (HGMF), such as the ISO-GRID™ from QA Laboratories, Ltd., as a hydrophobic barrier, which is a purchased item imposed on the array rather than a fabricated item. Alfenito ('419) at column 23, lines 13-27. Alfenito also teaches the use of a solution of silicone in an appropriate solvent as a hydrophobic barrier. Alfenito ('419) at column 64, lines 4-9. Nothing in Alfenito suggests or teaches using the instrument construction the array to fabricate hydrophobic areas in the array. In light of these differences, applicants respectfully request that the rejection of Claim 5 under 35 U.S.C. § 102 is withdrawn.

Claim Rejections – 35 U.S.C. § 103

Claims 3, 4, 6 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Alfenito ('419) in view of applicant's admission of the prior art and Butler et al. (U.S. Patent No. 6,589,726). Claims 3 and 4 are withdrawn above. The rejection of claims 6 and 7 is respectfully traversed.

The cited prior art (Alfenito) discloses making a microarray by depositing prbes on a substrate and then applying a separate material or process to make hydrophobic areas between features of the array. By contrast, the method of the present application uses a common instrument to both make the array probe sets and to make the hydrophobic areas. Thus there are clear differences in process between the applicants' method and that in the cited prior art. The applicants assert that this difference, now clearly reflected in the claims, is a non-obvious difference.

In making a microarray on a scale in which many features are constructed, the features are quite small. Note that the specification discusses that up to 786432 features can be constructed on an area of a microscope slide in a micromirror based instrument. Thus precision in the fabrication of the elements of the microarray is required. See a discussion on this topic in the specification paragraphs 15 to 17. In order to construct the features in the array and the hydrophobic areas between features with precision, it is enormously helpful for the same instrument to be used for both parts of the process, so the two fabrications can be performed without moving the substrate and therefore without losing alignment. The present invention enables this approach, Alfenito does not. This method enables the fabrication of very small and dense features with hydrophobic barriers between them, in a way that Alfenito does not. Nothing in Alfenito discusses using the same instrument to make both the probes and the hydrophobic regions. Nothing in Alfenito discusses keeping the substrate fixed in position while both processes are performed. Also, nothing in Alfenito provides a motivation for anyone to perform the processes as the applicant has done here. Accordingly, Alfenito cannot make obvious the methods as claimed in this patent application. The Examiner is therefore requested to reconsider this ground of rejection and withdraw it.

Double Patenting

Claims 1-8 stand provisionally rejected as being unpatentable over Claim 16 of copending Application No. 10/674,768. The applicants also traverse this grounds of rejection.

The disclosure of Application No. 10/674,768 does disclose the concept of using hydrophobic barriers, but the claims of that application and the claims of this application are quite distinct and not overlapping. In fact, the claims of Application No. 10/674,768 are directed to methods for loading samples onto an array while the methods of the present invention are directed at methods for fabricating arrays with hydrophobic barriers. The two technologies are quite distinct and not obvious one in view of the other. It is submitted that the claims of this case are not obvious over the claims of Application No. 10/674,768 and the claims of Application No. 10/674,768 are not obvious over the claims of this case. There are limitations in the claims of each case not in the claims of the other and the Examiner has not demonstrated why those differences are obvious. It is believed that this rejection is misplaced and should be withdrawn.

Additional Prior Art

The Office Action notes the relevance of four patents that are not listed in the Information Disclosure Statement of the above-identified application.

New Claims

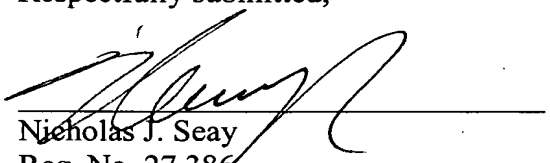
The applicants add three new claims (Claims 9-11) to denote the ability of a MAS™ to produce the microarray resulting from Claims 5-7 while holding the substrate in the identical position. See Specification, page 3, paragraph [0008]. Because the substrate is held in the identical position throughout the fabrication, it is possible to use all of the potential synthesis sites within the barrier-enclosed area, or subarray. See Specification, page 3, paragraph [0008].

The applicants have carefully considered the Examiner's rejections and comments. The applicants respectfully assert that all rejections cited by the Examiner have been overcome. In light of the above changes and arguments, the applicants respectfully request reconsideration of Application No. 10/673,760.

A petition for extension of time is enclosed herewith so this response will be considered as timely filed. Please charge this fee to Deposit Account No. 17-0055. If any other fee is due regarding this response or any other response, please consider this a request to charge the fee to Deposit Account No. 17-0055.

The Examiner is invited to contact the undersigned at the telephone number appearing below if such would advance the prosecution of this application.

Respectfully submitted,



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